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| EXAMINER |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/553,737 | MAENO, KURATO | |
| | Examiner | Art Unit | |
| | John B. King | 2435 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *18 November 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *2-6,8-13,15,16,18-20,22 and 24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-6,8-13,15,16,18-20,22 and 24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

1. This office action is in response to applicant's amendment filed on November 18, 2009.

2. Claims 2-6, 8-13, 15-16, 18-20, 22, and 24 are pending in this application.

3. Applicant's arguments in respect to the new issues of Claims 2-6, 8-13, 15-16, 18-20, 22, and 24 have been considered but they are not fully persuasive.

### *Response to Arguments*

4. Applicant's arguments filed November 18, 2009 have been considered but they are not fully persuasive and are considered moot based on the new grounds of rejection as shown below.

### *Examiner Notes*

5. Examiner cites particular columns and line numbers in the references as applied to the claims below for the convenience of the applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested that, in preparing responses, the applicant fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner.

### *Claim Objections*

6. Claim 15 recites using “dot patters” which should be “dot patterns” on line 6 of the claim.

7. Claim 24 recites “the modified version of the le least one PN code” which should be “the modified version of the at least one PN code”. Also, “bits that are inverted from the bits of the PN code” should be “bits that are inverted from the bits of the particular PN code”

8. Appropriate corrections are required.

### *Claim Rejections - 35 USC § 101*

9. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

10. **Claims 2-6, 8-13, 15-16, 18-20, 22, and 24** are rejected under 35 U.S.C. 101 as directed towards non-statutory subject matter of software, *per se*.

As per claims 2, 5, and 8, the claims lack the necessary physical articles or objects to constitute a machine or manufacture within the meaning of 35 U.S.C. 101. As such, they fail to fall within a statutory category. It is at best, functionally descriptive material *per se*. The claims appear to recite an apparatus that executes many sections, such as a document image generating section, which can be performed purely in

software. As software is not a statutory category these claims are directed towards non-statutory subject matter.

As per claims 15, 18, and 20, they are rejected under 35 U.S.C. 101 based on Supreme Court precedent and recent Federal Circuit decisions, a 35 U.S.C § 101 process must (1) be tied to a particular machine or (2) transform underlying subject matter (such as an article or materials) to a different state or thing. In re Bilski et al, 88 USPQ 2d 1385 CAFC (2008); Diamond v. Diehr, 450 U.S. 175, 184 (1981); Parker v. Flook, 437 U.S. 584, 588 n.9 (1978); Gottschalk v. Benson, 409 U.S. 63, 70 (1972); Cochrane v. Deener, 94 U.S. 780,787-88 (1876).

An example of a method claim that would not qualify as a statutory process would be a claim that recited purely mental steps. Thus, to qualify as a § 101 statutory process, the claim should positively recite the particular machine to which it is tied, for example by identifying the apparatus that accomplishes the method steps, or positively recite the subject matter that is being transformed, for example by identifying the material that is being changed to a different state.

Here, applicant's method steps are not tied to a particular machine and do not perform a transformation. These claims are directed towards the methods of using the apparatuses (or similar apparatuses) of claims 2, 5, and 8. These methods/apparatuses recite a series of steps that can be performed purely by software. As software is not a statutory category these claims are directed towards non-statutory subject matter. Thus, the claims are non-statutory.

The mere recitation of the machine in the preamble with an absence of a machine in the body of the claim fails to make the claim statutory under 35 USC 101. *Note the Board of Patent Appeals Informative Opinion Ex parte Langemyer et al.*

As per claims 3-4, 6, 9-13, 14, 16, 19, 22, and 24, the claims are rejected under 35 U.S.C. 101 as non-statutory for at least the reason stated above. These are dependant claims; however, they do not add any feature or subject matter that would solve any of the non-statutory deficiencies of claims 2, 5, 8, 15, 18, and 20.

### *Claim Rejections - 35 USC § 112*

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. **Claims 4-5, 15, 18, and 20** rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

13. Claims 4 recites the limitation of “generating a two-dimensional PN code which is different from or the same in a row direction and a column direction.” As the PN code is different from or the same the examiner will interpret this to mean generating a PN code. Claim 5 recites a similar limitation of “generating a three-dimensional PN code” which will be interpreted in the same manner of generating a PN code which is later used to watermark an image.

14. Claims 15, 18, and 20 recite "the generating step". As no steps are previously defined in the claims there is insufficient antecedent basis for this limitation in the claims. The examiner will interpret this limitation to refer to “generating a watermark image.”

15. Claim 20 recites the limitation “the at least one PN code”. There is insufficient antecedent basis for this limitation in the claim as it was removed from the claim in the amendment.

### *Claim Rejections - 35 USC § 103*

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

17. **Claims 2-6, 8-13, 15-16 and 18-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzaki (US Pre-Grant Publication 2003/0021442 A1, published 1-30-2003) in view of Cox et al. (US Patent 5915027) hereinafter referred to as Cox.

As per claim 2, Suzaki discloses a watermark information embedding apparatus, comprising: a document image generating section for generating a document image **(Figure 1 and paragraphs 42-43, Suzaki teaches a document image formation**

**portion to generate a document image.)**; generating representational watermark information and generating a watermark image in which the diffused units of watermark information are redundantly denoted by dot patterns that are repeated at a plurality of locations **(paragraphs 44, 56-61, Figure 3, and abstract, Suzaki teaches using dot patterns to watermark an image from watermark information. Suzaki, Figure 11, also teaches that watermark information is repeated throughout the document image.)**; and a synthesizing section for overlapping the document image and the watermark image so as to generate a watermarked document image **(paragraph 45, Suzaki teaches obtaining a watermark document image by combining the watermark document and the document.)** Suzaki also discloses the use of codes to form the watermark **(paragraph 56, Suzaki teaches the use of codes.)**

However, Suzaki does not specifically teach the use of PN codes.

Cox discloses a PN code generating section for generating at least one PN code **(Cox, Figure 1 and col. 4 lines 39-50, teaches the use of PN codes to watermark a document.)**; a watermark image generating section for diffusing units of watermark information using the PN code **(Cox, col. 4 lines 39-65, teaches watermarking data using PN codes.)**, wherein the units of watermark information are represented by bits **(The watermark information must be stored as bits if it is to be used digitally.)**, and wherein by representing the respective bit by the at least one PN code if the respective bit has a first value and by representing the respective bit by a modified version of the at least one PN code if the respective bit has a second value **(Cox, col. 4 lines 39-65, teaches having a PN-mapper that maps each symbol (bit) of the**

**watermark information to a pre-specified PN code, i.e. each bit will have a different PN code or a modified version of the PN code.)**

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Suzaki's teachings with the teachings of Cox because this would this would increase the security and data integrity of the generated watermark. If PN codes are used to watermark a document, the document and corresponding watermark information can be retrieved even if the document has undergone slight changes **(See US Patent 6031914, col. 2 lines 38-42, Tewfik teaches the need to hide the watermark to survive data manipulations and PN codes will allow for this.)**

As per claim 3, Suzaki in view of Cox disclose the watermark information embedding apparatus according to claim 2, wherein the watermark image generating section utilizes the at least one PN code to represent the watermark information with respect to row unit or column unit **(Cox, col. 4 lines 39-65, teaches watermarking data using PN codes. Suzaki, Figure 3 and paragraphs 60-61, teaches the PN codes being used to represent the height and width (column and row) of the watermark signal.)**

As per claim 4, Suzaki in view of Cox disclose the watermark information embedding apparatus according to claim 2, wherein the PN code generating section generates at least one two-dimensional PN code which is different from or the same in a row direction and a column direction **(Suzaki, paragraph 56, teaches the generation**

**of N-dimensional codes where N >=2 and Suzaki, paragraphs 60-61, teaches that the two-dimensional codes represent the height and width (column and row) of the watermark image. Cox, col. 4 lines 39-65, teaches watermarking data using PN codes.)**

As per claim 5, Suzaki discloses a watermark information embedding apparatus comprising: a document image generating section for generating a document image **(Figure 1 and paragraphs 42-43, Suzaki teaches a document image formation portion to generate a document image.)**; a code generating section for generating two dimensional codes that together form a three-dimensional code which is different or the same in a row direction and a column direction **(paragraphs 56-60, Suzaki teaches generating N-dimensional codes that represent the height and width (column and row) of the watermark signal.)**; a watermark image generating section for diffusing units of watermark information using the two-dimensional codes **(paragraphs 56-60, Suzaki teaches the use of N-dimensional codes to generate a watermark image.)**, generating a sequence of representational watermark information, and generating a watermark image in which the diffused units of watermark information are redundantly denoted by dot patterns that are repeated at a plurality of locations **(paragraphs 44, 56-61, Figure 3, and abstract, Suzaki teaches using dot patterns to watermark an image from watermark information. Suzaki, Figure 11, also teaches that watermark information is repeated throughout the document image.)**, and a synthesizing section for overlapping the document image and corresponding watermark

image so as to generate a watermarked document image **(paragraph 45, Suzaki teaches obtaining a watermark document image by combining the watermark document and the document.)**

However, Suzaki does not specifically state the use of a multipage document or watermarking a multipage document.

It would have been obvious to one of ordinary skill in the art at the time of the invention to insert a watermark into a multipage document. Suzaki, paragraph 56, teaches the use of N-dimensional (N >= 2) codes being used to insert a watermark into a single page document. If the two-dimensional codes represent the height and width of the watermark signal (page) as shown in Suzaki paragraph 60, then it would be obvious for the third dimension to be the page number and to insert a watermark into that multipage document.

However, Suzaki also does not specifically state the codes to be used are PN codes.

Cox discloses a PN code generating section for generating at least one PN code **(Cox, Figure 1 and col. 4 lines 39-50, teaches the use of PN codes to watermark a document.)**; a watermark image generating section for diffusing units of watermark information using the PN code **(Cox, col. 4 lines 39-65, teaches watermarking data using PN codes.)**, wherein the units of watermark information are represented by bits **(The watermark information must be stored as bits if it is to be used digitally.)**, and wherein by representing the respective bit by the at least one PN code if the respective bit has a first value and by representing the respective bit by a modified

version of the at least one PN code if the respective bit has a second value **(Cox, col. 4 lines 39-65, teaches having a PN-mapper that maps each symbol (bit) of the watermark information to a pre-specified PN code, i.e. each bit will have a different PN code.)**

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Suzaki's teachings with the teachings of Cox because this would this would increase the security and data integrity of the generated watermark. If PN codes are used to watermark a document, the document and corresponding watermark information can be retrieved even if the document has undergone slight changes **(See US Patent 6031914, col. 2 lines 38-42, Tewfik teaches the need to hide the watermark to survive data manipulations and PN codes will allow for this.)**

As per claim 6, Suzaki in view of Cox discloses the watermark information embedding apparatus according to claim 2, wherein there is at least one dot pattern representing special watermark information **(paragraphs 44, 56-61, Figure 3, and abstract, Suzaki teaches using dot patterns to contain special information.)**

As per claim 8, Suzaki discloses a watermark information detecting apparatus for extracting units of watermark information **(paragraphs 47-50, Suzaki teaches a watermark information detection device.)**, which is diffused by at least one code and redundantly denoted by dot patterns that are repeated at a plurality of locations in a watermark image **(paragraphs 44, 56-61, Figure 3, and abstract, Suzaki teaches**

**using dot patterns to watermark an image from watermark information using N-dimensional codes. Suzaki, Figure 11, also teaches that watermark information is repeated throughout the document image.)**, from a document, comprising: a watermark information detector **(paragraph 18-19, Suzaki teaches detection of the watermark by use of the dot patterns.)**, the watermark information detector detecting the diffused watermark information to extract the watermark image from the document **(paragraph 18-19, Suzaki teaches detection and extraction of the watermark image.)**, and estimating an area occupied by the watermark information based on the watermark image and the at least one code **(paragraphs 97-99, Suzaki teaches calculating the watermark area.)**

However, Suzaki also does not specifically state the use of PN codes.

Cox discloses a PN code generating section for generating at least one PN code **(Cox, Figure 1 and col. 4 lines 39-50, teaches the use of PN codes to watermark a document.)**; a watermark image generating section for diffusing units of watermark information using the PN code **(Cox, col. 4 lines 39-65, teaches watermarking data using PN codes.)**, wherein the units of watermark information are represented by bits **(The watermark information must be stored as bits if it is to be used digitally.)**, and wherein by representing the respective bit by the at least one PN code if the respective bit has a first value and by representing the respective bit by a modified version of the at least one PN code if the respective bit has a second value **(Cox, col. 4 lines 39-65, teaches having a PN-mapper that maps each symbol (bit) of the**

**watermark information to a pre-specified PN code, i.e. each bit will have a different PN code.)**

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Suzaki's teachings with the teachings of Cox because this would this would increase the security and data integrity of the generated watermark. If PN codes are used to watermark a document, the document and corresponding watermark information can be retrieved even if the document has undergone slight changes **(See US Patent 6031914, col. 2 lines 38-42, Tewfik teaches the need to hide the watermark to survive data manipulations and PN codes will allow for this.)**

As per claim 9, Suzaki in view of Cox discloses the watermark information detecting apparatus according to claim 8, wherein the watermark information detector discriminates whether the watermark information is correctly detected according to at least one correlation peak value of the at least one PN code **(paragraph 102, Suzaki teaches determining if the watermark contains any noise information.)**

As per claim 10, Suzaki in view of Cox discloses the watermark information detecting apparatus according to claim 8, wherein the watermark information detector calculates correlation values using different PN codes, detects a correlation peak value of each PN code, and estimates row addresses and column addresses according to the correlation peak values **(Suzaki, paragraphs 19, 103-104, teaches the use of a filter to detect the watermark information on the watermarked document. Figures 17**

**and 18 also teach the recovering of the codes (row and column) that were used to embed the watermark.)**

As per claim 11, Suzaki in view of Cox discloses the watermark information detecting apparatus according to claim 8, wherein the watermark information detector calculates correlation of two-dimensional PN code, which include different PN codes in a row direction and a column direction **(paragraphs 19 and 56-60 and 103, Suzaki discloses the use of two-dimensional filters to determine the codes. Suzaki also teaches that these codes can be any dimension greater than or equal to 2, and that the two-dimensional version represents the height and width (column and row) of the watermark.)**, so as to estimate the area occupied by the watermark information **(paragraphs 97-99, Suzaki teaches calculating the watermark area.)**

As per claim 12, Suzaki in view of Cox discloses the watermark information detecting apparatus according to claim 8, and wherein the watermark information detector calculates correlation of three-dimensional PN codes, which include different PN codes in a row direction and a column direction **(paragraphs 19 and 56-60 and 103, Suzaki discloses the use of two-dimensional filters to determine the codes. Suzaki also teaches that these codes can be any dimension greater than or equal to 2, and that the two-dimensional version represents the height and width (column and row) of the watermark.)**, so as to estimate the area occupied by the

watermark information **(paragraphs 97-99, Suzaki teaches calculating the watermark area.)**

However, Suzaki in view of Cox does not specifically state the use of a multipage document or watermarking a multipage document.

It would have been obvious to one of ordinary skill in the art at the time of the invention to insert a watermark into a multipage document. Suzaki, paragraph 56, teaches the use of N-dimensional (N >= 2) codes being used to insert a watermark into a single page document. If the two-dimensional codes represent the height and width of the watermark signal (page) as shown in Suzaki paragraph 60, then it would be obvious for the third dimension to be the page number and to insert a watermark into that multipage document.

As per claim 13, Suzaki in view of Cox disclose the watermark information detecting apparatus according to claim 8, wherein there is at least one dot pattern representing special watermark information **(paragraphs 44, 56-61, Figure 3, and abstract, Suzaki teaches using dot patterns to contain special information.)**

As per claim 15, Suzaki discloses a method of embedding watermark information, comprising: generating a watermark image, the generating step including using a watermark information embedding apparatus to diffuse units of watermark information using at least one code **(paragraphs 56-60, Suzaki teaches using codes to generate a watermark.)**, the diffused units of watermark information being

redundantly denoted in the watermark image by dot patterns that are repeated at a plurality of locations **(paragraphs 44, 56-61, Figure 3, and abstract, Suzaki teaches using dot patterns to watermark an image from watermark information. Suzaki, Figure 11, also teaches that watermark information is repeated throughout the document image.)**; combining the watermark image and a document image so as to generate a combined image **(paragraphs 45-46, Suzaki teaches generating the document and printing the document.)**; and outputting the combined image **(paragraphs 45-46, Suzaki teaches generating the document and printing the document.)**

However, Suzaki also does not specifically state that the codes are PN codes.

Cox discloses a PN code generating section for generating at least one PN code **(Cox, Figure 1 and col. 4 lines 39-50, teaches the use of PN codes to watermark a document.)**; a watermark image generating section for diffusing units of watermark information using the PN code **(Cox, col. 4 lines 39-65, teaches watermarking data using PN codes.)**, wherein the units of watermark information are represented by bits **(The watermark information must be stored as bits if it is to be used digitally.)**, and wherein by representing the respective bit by the at least one PN code if the respective bit has a first value and by representing the respective bit by a modified version of the at least one PN code if the respective bit has a second value **(Cox, col. 4 lines 39-65, teaches having a PN-mapper that maps each symbol (bit) of the watermark information to a pre-specified PN code, i.e. each bit will have a different PN code.)**

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Suzaki's teachings with the teachings of Cox because this would this would increase the security and data integrity of the generated watermark. If PN codes are used to watermark a document, the document and corresponding watermark information can be retrieved even if the document has undergone slight changes **(See US Patent 6031914, col. 2 lines 38-42, Tewfik teaches the need to hide the watermark to survive data manipulations and PN codes will allow for this.)**

As per claim 16, Suzaki in view of Cox disclose the method of embedding watermark information according to claim 15, wherein there is at least one dot pattern representing special watermark information **(paragraphs 44, 56-61, Figure 3, and abstract, Suzaki teaches using dot patterns to contain special information.)**

As per claim 18, Suzaki discloses a method for detecting watermark information using a watermark information detecting apparatus to extract units of watermark information from document, the units of watermark information being represented by bits and being diffused by at least one code in a watermark image **(paragraph 18-19, Suzaki teaches the use of a detecting apparatus to detect and extract watermark information. paragraphs 56-60, Suzaki teaches the use of the codes to embed watermark information. The watermark information must be stored as bits if it is to be used digitally.)**, the method comprising the steps of: (a) extracting the watermark image, step (a) including detecting the diffused units of watermark information

**(paragraphs 18-19, Suzaki teaches extracting the data by a correlation.)**; (b) calculating at least one correlation between the watermark image and the at least one code **(paragraphs 18-19, Suzaki teaches extracting the data by a correlation.)**; and (c) estimating an area occupied by the watermark information according to steps (a) and (b) **(paragraphs 97-99, Suzaki teaches calculating the watermark area.)**.

However, Suzaki also does not specifically state that these codes are PN codes.

Cox discloses a PN code generating section for generating at least one PN code **(Cox, Figure 1 and col. 4 lines 39-50, teaches the use of PN codes to watermark a document.)**; a watermark image generating section for diffusing units of watermark information using the PN code **(Cox, col. 4 lines 39-65, teaches watermarking data using PN codes.)**, and wherein by representing the respective bit by the at least one PN code if the respective bit has a first value and by representing the respective bit by a modified version of the at least one PN code if the respective bit has a second value **(Cox, col. 4 lines 39-65, teaches having a PN-mapper that maps each symbol (bit) of the watermark information to a pre-specified PN code, i.e. each bit will have a different PN code.)**

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Suzaki's teachings with the teachings of Cox because this would this would increase the security and data integrity of the generated watermark. If PN codes are used to watermark a document, the document and corresponding watermark information can be retrieved even if the document has undergone slight changes **(See**

**US Patent 6031914, col. 2 lines 38-42, Tewfik teaches the need to hide the watermark to survive data manipulations and PN codes will allow for this.)**

As per claim 19, Suzaki in view of Cox disclose the method of detecting watermark information according to claim 18, wherein there is at least a dot pattern representing special watermark information **(paragraphs 44, 56-61, Figure 3, and abstract, Suzaki teaches using dot patterns to contain special information.)**

As per claim 20, Suzaki discloses a method for generating a watermarked document comprising: generating a watermark image, the generating step including diffusing units of watermark information and redundantly denoting the diffused units of watermark information by dot patterns that are repeated at a plurality of locations **(paragraphs 56-60, Suzaki teaches using codes to generate a watermark using dot patterns. Suzaki, Figure 11, also teaches that watermark information is repeated throughout the document image.)**; and combining the watermark image and a document image **(paragraph 45, Suzaki teaches obtaining a watermark document image by combining the watermark document and the document.)**

However, Suzaki also does not specifically state that these codes are PN codes.

Cox discloses a PN code generating section for generating at least one PN code **(Cox, Figure 1 and col. 4 lines 39-50, teaches the use of PN codes to watermark a document.)**; a watermark image generating section for diffusing units of watermark information using the PN code **(Cox, col. 4 lines 39-65, teaches watermarking data**

**using PN codes.)**, wherein the units of watermark information are represented by bits **(The watermark information must be stored as bits if it is to be used digitally.)**, and wherein by representing the respective bit by the at least one PN code if the respective bit has a first value and by representing the respective bit by a modified version of the at least one PN code if the respective bit has a second value **(Cox, col. 4 lines 39-65, teaches having a PN-mapper that maps each symbol (bit) of the watermark information to a pre-specified PN code, i.e. each bit will have a different PN code.)**

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Suzaki's teachings with the teachings of Cox because this would this would increase the security and data integrity of the generated watermark. If PN codes are used to watermark a document, the document and corresponding watermark information can be retrieved even if the document has undergone slight changes **(See US Patent 6031914, col. 2 lines 38-42, Tewfik teaches the need to hide the watermark to survive data manipulations and PN codes will allow for this.)**

18. **Claims 22 and 24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzaki in view of Cox and further in view of Ogino et al. (US Patent 6058243) hereinafter referred to as Ogino.

As per claims 22 and 24, Suzaki in view of Cox does not specifically disclose having a PN code and an inverted PN code.

Ogino discloses the at least one PN code includes a particular PN code and the modified version of the at least one PN code has bits that are inverted from the bits of the particular PN code **(Ogino, Figure 1 and col. 9 lines 20-33, teaches having a PN code inverter that determines if the output PN code should be inverted or not based on an inverse timing signal.)**

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Suzaki by adding the teachings of Ogino because this would prevent the detection of the PN code in the watermark. By using multiple PN codes or the inverse PN code it will be much harder for an attacker to detect and remove the watermark to allow copying of the data **(See Ogino, col. 3 line 50-col. 9 line 21.)**

## *Conclusion*

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John B. King whose telephone number is (571)270-7310. The examiner can normally be reached on Mon. - Fri. 7:30 AM - 4:00 PM est..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kim Vu can be reached on (571)272-3859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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